The Home of Tomorrow

By Howard H. Heffley

MAN'S first house was a mere shelter to protect him from the elements. There was no thought of comfort or convenience expressed in their construction, but as the surroundings changed and man became less nomadic, more time and energy were expanded in changing the mere shelters to more substantial and more practical quarters. Comfort and convenience became key words in home building. For comfort there were developed such things as better heating units, beautiful and scientific illumination, and air conditioning systems for convenience, many new electric appliances were being continuously offered on the market, thereby saving hours of toiling and, through the radio alone, giving much happiness. So through the outgrowth of the industrial system, along with which must be considered the mechanical development, one may well recognize the accomplishments in the field of home appliances and illumination. These devices and designs have not only added more leisure time to the housewife's day but they have also added to the beauty of the home.

For the past few years there has been a relatively large increase in the use of electrical equipment in the homes and, according to all indications, this market will continue to increase in the years to come. In view of this trend, Westinghouse has built a laboratory, in the form of a modern home, at Mansfield, Ohio. There the full use of modern home electrical equipment can be demonstrated and new devices can be tried in actual service. This arrangement offers an opportunity to test the practicability of these new designs and make any improvements necessary before presenting them for general marketing.

This home is an eight-room house of standard wood and brick construction, the cost of which was around $12,000. In it was installed all the equipment which is in the development stage and which in the normal course of events could not be expected to be on the market for several years. In this sense the house is considered the "Home of Tomorrow." The aim has been to embody all the advanced ideas on home construction, home economics, and home conveniences into one building.

Probably the most novel and efficient operation performed by any of the conveniences in this experimental house, is the water heating system. The heat for this system is provided by reverse refrigeration in which the compressor used in a refrigerator has its operation reversed in order to provide heat instead of cold. This is accomplished by circulating water from a storage tank through a compressor unit where the water picks up heat liberated by the process of the refrigerant changing from a gas to a liquid. However, most of the heat used to raise the temperature of the water to about 140 degrees is obtained from the atmosphere of the room and from the motor and compressor. This method permits the unit to operate under an efficiency of approximately 170 per cent. A thermal switch mounted on the storage tank maintains the temperature of the water between 140 and 150 degrees and under ordinary conditions permits 25 to 30 gallons of water to be withdrawn from the storage tank without reducing the temperature of the water as set by the thermostat.

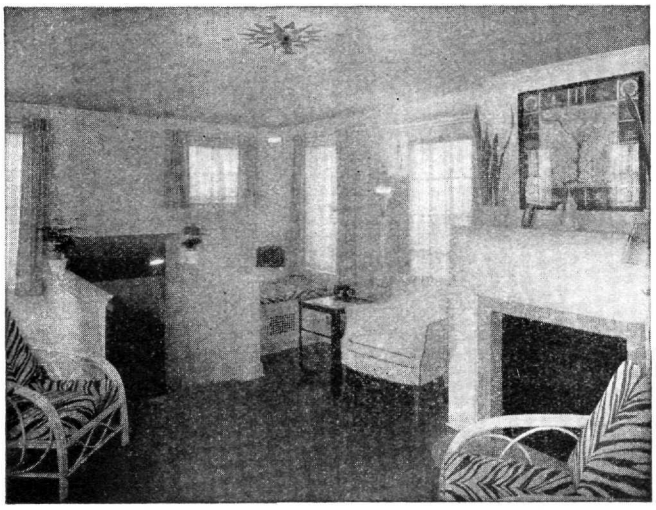
The illumination in general has been designed to provide the proper intensity for all parts of the house. Unique lighting fixtures and arrangements are installed in the most advantageous places and render both beauty and comfort to the eye. The practical measure of such units, however, has not been neglected, as it will be discussed later in this article.

A complete air conditioning unit furnishes warm or cold air, properly humidified and cleaned. The cooling plant installed at the present time has about half the capacity necessary to cool the entire house, but according to results obtained, the economy of this plant offsets the limitations encountered.

Air Conditioning

Although air conditioning has been used for several years in large buildings, few private homes of today have such systems installed. Westinghouse has constructed

LIVING ROOM



PENTHOUSE

in the "Home of Tomorrow" a unit for conditioning both the warm and cool air. The entire system furnishes heating and humidification in winter, cooling in summer, and air cleaning. The degree of these operations may be selected by the occupants of the house and the desired effect maintained automatically by a system of thermostats and manual switches.

For heating, an oil burner and boiler have been used to supply steam for the heating coils of a Westinghouse air conditioning unit. The burner is of the rotary wall flame type equipped with hot wire ignition. To maintain constant steam pressure in the boiler, there is a pressure regulator which controls the burner.

The supply of steam at the heating coils is controlled by a steam regulating valve with two control bulbs. One bulb is located in the air stream leaving the air conditioning unit and the other bulb is located at the entrance of the duct provided for bringing in outside make-up air.

These bulbs are adjusted so that as the outside temperature decreases, the temperature of the air leaving the air conditioning unit is increased by the admission of more steam to the heating coils.

The make-up air, after having been brought in, is cleaned by passing through a filter of the glass-wool type. A humidifying equipment, consisting of a number of spray nozzles which direct small streams of water against targets, effect the amount of vapor in this air as set by the humidistat.

A fan contained in the conditioning unit then forces the air over the warm coils and through the duct system up to the various rooms of the house. This fan may be operated at two different speeds during the heating season. At the low speed, the fan operates so as to force just enough air through the house to prevent the occurrence of a stagnant or hot and cold spots. At the high speed, the fan forces enough air through the house to more than meet the full heating requirements.

Instead of the full capacity cooling equipment required to cool this particular residence, which is estimated to be the removal of 53,000 B.T.U.'s per hour for 15 degrees cooling; a much smaller unit has been installed which removes only 24,000 B.T.U.'s per hour. From the standpoint of the house owner, this type of a cooling system has decided attractions as compared with the full capacity plant, because the initial cost is lower and the operating costs are less.

After the air has been conditioned, it is distributed to the various rooms of the house by a system of ducts which is divided into three supply and return sections. One supply and return duct section supplies air to the living room and dining room. A second section supplies air to the three bed rooms; and a third section includes supply and return ducts for the rest of the house.

Since a full capacity cooling plant has not been installed only parts of the house can be effectively cooled at one time. This is accomplished by the three sections of supply and return ducts. However, all three sections can be used at the same time but the number of B.T.U.'s removed will not be as great as if just one section was used at a time.

For automatic control of the house temperature three thermostats are provided, two for cooling and one for heating. The heating thermostat is located in the hall while one of the cooling thermostats is located in the living room and the other is located in the main bed room. These three thermostats are provided with remote control bulbs which are located in the recirculating air ducts. It is believed that the temperature of the air in the recirculating air ducts is more representative of the average air temperature in a number of rooms than the temperature at any one spot on the wall in any one of the rooms.

The penthouse on the roof has its own heating system which consists of electric panel heaters imbedded in the plaster.

Modern Lighting

The "Home of Tomorrow" has an 80 K.W. connected load which supplies 87 convenient outlets, 111 lighting outlets, 17 portable lamps, 320 light bulbs and 21 built-in appliances. Compared with the average home of today, these figures are comparatively large as the usual connected load is 2.9 K.W. which supplies approximately 7 convenience outlets, 22 light outlets, 6 portable lamps, 28 light bulbs and 8 appliances.

The light system, which is both practical and efficient, sets off the beauty of the house and furnishings with various hues and brilliance. For the purpose of description this system may be divided into two classifications: external and internal lighting.

For external lighting there are outdoor weatherproof floodlight projectors located at various intervals near the wall and which portray the house against the blackness of night. With such a background, the main entrance stands forth, outlined by a golden light of slightly greater intensity. From across the lawn a faint glow filters from an illuminated pool using a Westinghouse underwater projector with a tilting spread lens. The roof of the second floor is flat and provides a quiet outdoor sitting

room only slightly illuminated by louver type flush units all of which are directed down on the roof. The garage roof is of the same construction and has the same lighting effect.

Proceeding into the house, our attention is attracted to the sunken fixture in the ceiling of the entrance hall. This unit has specially etched glass through which is emitted a soft glow from four bulbs inside. Bulbs concealed behind mirror panels illuminate a mirror 20 inches wide and 48 inches high. This arrangement of light gives a most unusual effect in that it does not produce a glare in the mirror. A small closet for wraps is lighted by a 40-watt lamp in a flush type monel metal unit.

The living room contains several forms of lighting. Fifty watt lamps in mirrored glass reflectors and covered by milky white glass panels are located behind the molding at both ends of the room. When in use this arrangement floods the entire room with a mellow light for conversational sitting. For brighter light, two indirect floor torches are placed on either side of the fireplace. The light from each torch reflects from the ceiling with sufficient intensity to prevent any effects of shadowing.

The dining room is the most unusually lighted room in the house. In the center of the ceiling is a specially designed semi-flush fixture with a flashed and etched ornamental glass panel. Around the entire fixture and conforming to its general shape is a heavy built-in molding which is the theme carried out over the entire ceiling. From this beautiful unit one may obtain one intensity of amber, one of blue and two of white through the use of thirty small lamps. One of the newer forms of illumination for a domicile unit is the daylight effect in the windows. This is produced by lamps, with opal panels, built into the window frames.

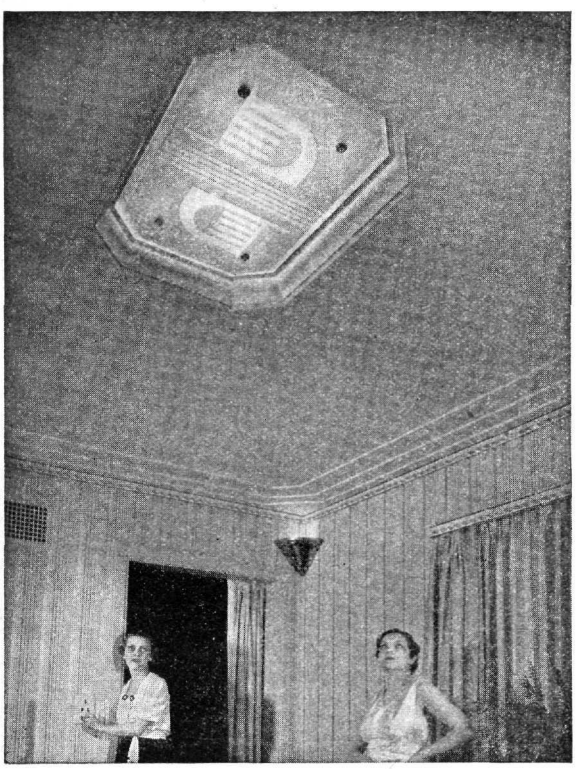
In the breakfast nook a modernistic touch is added by a die cast chromium plated hanger and a monax globe. An enclosing unit, similar to the one used in the breakfast nook, is used in the pantry. The kitchen has an enclosing globe fixture in the center of the celing, while in front of two large windows and over the sink are placed flush type built-in units. Over working spaces and in corners are placed V-type fixtures.

Two of the bed rooms have small table lamps and illuminated mirrors. These have mirrored strips which conceal small lamps. The third bedroom or baby's room is arranged with one particular outlet for the use of a portable ultra-violet ray lamp. For general illumination there are a portable floor lamp and a flush type unit with an opal panel. The latter is placed about a foot above the floor.

The reading room on the second floor has unique illuminated book shelves lighted by flush units using 25-watt lamps behind opal panels. They are arranged to light only the rear edge of the books and therefore project out only a little in front of the shelves.

A novel feature of the entire house is a burglar light system. One 25-watt intermediate base lamp in a small flush type unit about 8 inches above the floor is located in every room in the house. In every case they are arranged so that only a small amount of light will be produced in the room so that a hurried inspection can be made.

The recreation room in the basement has two flush units 8 inches wide by 30 inches long placed close together in the center of the ceiling for games. For dancing there are four V-type units opposite the windows.



DINING ROOM

Our Mag

A college magazine is a great invention.
The college gets all the credit,
The printer gets all the money,
And the staff gets all the blame.

—*Lehigh Burr.*

A girl
Ought to know
When she
Ought to "No!"

—*Selected.*

Courtesy First

Little Minerva was writing to her father, away on a business trip.

"I would like to send you some kisses," she finally added, "but I have been eating onions, so 'scuse, please."

Friend: "Why is it that your son always rides in a car and you always go on the street car?"

Father: "Well, he has a rich father and I haven't."